

Partial Translation of JP 62-094834 U

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Applicant : SUMITOMO BAKELITE CO., LTD

Title of the Invention : LAMINATE

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Translation of Claim

2. Claim

A laminate, wherein a vinylidene chloride copolymer layer A, a heat-resistant polyolefin layer B, an adhesive resin layer C formed of an ethylene-vinyl acetate copolymer, an ethylene-acrylic ester copolymer, a modified olefin resin, or a mixture thereof, and an adhesive resin layer D formed of resin obtained by acid-modifying polypropylene or linear low density polyethylene are laminated in an order of B · D · C · A · C · D · B.

20 Translation of Lines 9 to 12, Page 2

Conventionally, a film made of a vinylidene chloride copolymer is excellent in gas barrier properties, strength, transparency, workability, and suitability as a packaging material. Particularly, it is being used widely for food packaging.

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Translation of Example, Line 11, Page 6 to Line 10, Page 7

[Example]

Hereinafter, the present invention is described using examples.

The laminates of Examples and Comparative Examples having sizes and compositions indicated in Table 1 were produced as shown in FIG. 2 by a coextrusion process in which the respective resins were extruded individually with 4 or 5 extruders, and molten resins were introduced into a T-die.

The interlayer adhesiveness was tested as follows. That is, each laminate was cut into a 15-cm square, was retort-treated in pressurized water having a temperature of 120°C for 60 minutes, was cooled, and was then cut into a sample with a width of 15 mm, which was subjected to 180°

delamination test using a SHIMADZU autograph.

For a practical test, a molded article with a shape as shown in FIG. 1 was produced with each laminate using a vacuum molding machine. The molded article was filled with water and was sealed using aluminum foil as
5 a cover. Thereafter, it was retort-treated in pressurized water having a temperature of 120°C for 60 minutes. This was cooled and the appearance thereof was evaluated for comparison according to the following criteria:

○: no deformation or deterioration of container,

△: slightly deformed or whitened, and

10 x: considerably deformed or whitened.

Table 1

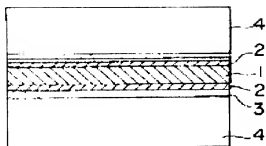
Example No.	Layer-composing resin (%) and each layer thickness (μ)							Interlayer adhesiveness (g/15 mm)		Practical test
	First layer ^{*1}	Second layer ^{*2}	Third layer ^{*3}	Fourth layer ^{*4}	Fifth layer	Sixth layer	Seventh layer	Before treatment	After treatment	
Example 1	FS2011A 350 μ	QF500 15 μ	EVA 10 μ	PVDC 50 μ	EVA 10 μ	QF500 15 μ	FS2011A 350 μ	1000	1000	○
Example 2	"	QF500(50) EVA (20) 15 μ	EVA 10 μ	"	EVA 10 μ	QF500(80) EVA (20)	"	1100	1100	○
Example 3	"	QF500	EVA(50) NF550(50) ^{*5}	"	EVA(50) NF550(50)	QF500	"	1500	1500	○
Example 4	"	QF500(50) EVA (20)	"	"	"	QF500(80) EVA (20)	"	1500	1500	○
Example 5	"	QF500(80) FS2011(20)	"	"	"	QF500(80) FS2011A (20)	"	1300	1300	○
Example 6	"	QF500	EEA ^{*6}	"	EEA	QF500	"	1000	1000	○
Example 7	FS2011A	QF500	EEA (80) NF550(20)	PVDC	EEA (80) NF550(20)	QF500	FS2011A	1300	1300	○
Example 8	"	QF500(80) NF500(20)	"	"	"	QF500(80) NF500(20)	FS2011A ^{*7}	1500	1500	○
Example 9	FS2011A	QF500	EVA	"	EVA	HB030	S5008	1500	1500	○
Example 10	S5008	HB030(50)	EVA (30) VF500(70) ^{*9}	"	EVA (30) VF500(70)	HB030(50)	"	1300	1300	△
Example 11	"	HB030(80) VF500(20)	"	"	"	HB030(80) VF500(20)	"	1300	1300	△
Comparative Example 1	FS2011A	EVA	PVDC	EVA	FS2011A			600	300	x
Comparative Example 2	"	QF500(50) EVA (50)	"	QF500(50) EVA (50)	"			600	500	△
Comparative Example 3	"	QF500(50) EVA (50)	"	NF550(50) EVA (50)	"			700	400	x
Comparative Example 4	"	EEA (50) QF500(30) QF500(60) PMMA (20) ^{*10}	"	EEA (50) QF500(60) PMMA (20)	"			800	500	△

Footnote on the table

- *1 Polypropylene, homopolymers with a concentration of 0.91
- *2 Acid-modified polypropylene resin, manufactured by Mitsui Petrochemical Industries Ltd. (Product name: ADMER)
- 5 *3 Ethylene-vinyl acetate copolymer, manufactured by Du Pont-Mitsui Polychemicals Co., Ltd. (Product name: EVAFLEX)
- *4 A product obtained by adding a suitable amount of acetyl tributyl citrate and epoxidized soybean oil to a copolymer of 85 parts by weight of vinylidene chloride and 15 parts by weight of vinyl chloride
- 10 *5 Acid-modified linear low density polyethylene resin, manufactured by Mitsui Petrochemical Industries Ltd. (Product name: ADMER)
- *6 Ethylene-ethyl acrylate copolymer, manufactured by Du Pont-Mitsui Polychemicals Co., Ltd. (Product name: EVAFLEX EEA)
- 15 *7 High density polyethylene, manufactured by Showa Denko K.K. (Product name: SHOLEX)
- *8 Acid-modified high density polyethylene resin, manufactured by Mitsui Petrochemical Industries Ltd. (Product name: ADMER)
- *9 Acid-modified ethylene-vinyl acetate copolymer resin, manufactured by Mitsui Petrochemical Industries Ltd. (Product name: ADMER)
- 20 *10 Polymethacrylic acid methyl ester, manufactured by Sumitomo Chemical Co., Ltd.

25 With reference to Examples 1 to 11 and Comparative Examples 1 to 4, the laminate of the present invention was found to have a stronger adhesiveness as compared to conventional ones and heat resistance that allowed it to withstand severe conditions for the retort treatment, which was carried out in pressurized water having a temperature of 120°C for 60 minutes.

FIG. 2



1. Vinylidene chloride copolymer
2. Ethylene-vinyl acetate copolymer
3. Acid-modified polypropylene
4. Polypropylene